Vulkem EWS with PUMA Technology
(Pedestrian)

Waterproof Traffic Coating System- Pedestrian System
Ready for Use 1 Hour after Application

www.tremco.com.au

PRODUCT DESCRIPTION

Vulkem Extreme Wearing System (EWS) is a waterproof Pedestrian traffic deck coating system that utilises polyurethane-methacrylate (PUMA) technology. Vulkem EWS with PUMA Technology is designed to have tenacious adhesion and extreme abrasion resistance. It can be walked on in one hour, which will minimise operation disruption. Vulkem EWS is composed of:

- Tremco PUMA Primer
- Tremco PUMA BC - Waterproofing Base Coat
- Tremco PUMA TC - UV Stable slip resistant Top Coat

USAGE/PURPOSE

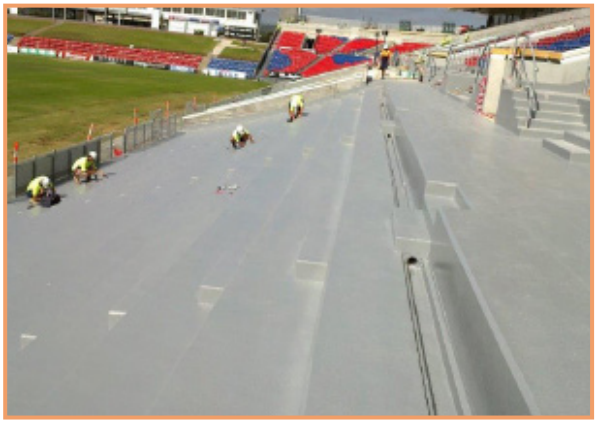
Vulkem EWS is a cold-applied traffic deck coating system designed for waterproofing concrete slabs and protecting occupied areas underneath from water damage. Additionally, the system will protect the concrete from the damaging effects of chloride, deicing salts, chemicals, petrol, oils and anti-freeze. The Pedestrian System is ideal for stadiums, balconies and footpaths .

PACKAGING

- ❑ Tremco PUMA Primer: 22.7L pails
- ❑ Tremco PUMA BC: 22.7L pails
- ❑ Tremco PUMA TC: 22.7L pails
- ❑ Tremco PUMA Initiator: 22.7L pails
- ❑ Tremco PUMA Cleaner: 22.7L pails

COLOUR

Stock: Slate Grey.
Made to Order: Colours and Clear with minimum order and lead times apply



FEATURES & BENEFITS

- ❑ Polyurethane-methacrylate (PUMA) technology delivers extreme durability while maintaining its crack-bridging characteristics.
- ❑ Rapid set-up times allow for quick overall installation, as well as the ability to open up to foot traffic one hour later.
- ❑ Can be applied at temperatures below -6°C, which allows for continuation of projects in the colder months.
- ❑ Initiator adjustments allow for 30 to 45 min cure time between applications, even at temperatures below freezing.
- ❑ Compatible with Tremco sealants and coatings, which is essential for tie-ins,detailing and penetrations.
- ❑ Extremely forgiving application allows users to apply additional coats long after the previous coat has cured.
- ❑ Unique chemistry allows for easy repair.
- ❑ Satisfies the VOC limitations for **Green Star** performance coatings

TYPICAL PHYSICAL PROPERTIES			
PROPERTY	**TEST METHOD**	**Vulkem EWS BC (All Grades)**	**Vulkem EWS TC**
VOC Content	Method 310	0 g/L	0 g/L
% Solids (By Weight)	ASTM D1353	100%	100%
Drying time@ 23°C, 50% RH	ASTM D1640	1.5mm film, 1hr	0.4-0.75mm film, 1hr
Elongation	ASTM D638	407% - 420%	130%
Elongation	ASTM D638	Min 30%	Min 30%
Tensile Strength	ASTM D638 @ 23°C	683 - 1158 N/cm^2	680N/cm^2
Tearing Resistance	ASTM D4073	405 N	903 N
Hardness (Shore D)	ASTM D2240	18 - 35	55
Hardness (Shore A)	ASTM D2240	65 - 87	100
Abrasion Resistance (1,000 cycles)	ASTM D4060	N/A	51 mgm
Low-Temperature Crack Bridging	ASTM C1305	Passes	N/A
Peak Load @ 22.7°C, avg.	ASTM D5147	>48.3 N/cm^2	164 N/cm^2
Puncture Resistance	ASTM D5602	>25.4 kg	>25.4 kg
Water Absorption	ASTM D570	<0.1%	<0.1%
Water Vapour Transmission	ASTM E96	1.72 Ng/s m^2 Pa	1.72 Ng/s m^2 Pa
Adhesion-in-Peel	ASTM C794	Concrete failure with primer	N/A
Self-Ignition Temperatures (°C)	ASTM D1929	427°C	454°C

** Drying times will vary depending on ambient temperature and relative humidity*

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SHELF LIFE

- ❑ 12 Months when stored as recommended in original, unopened packaging.

STORAGE

- ❑ Store in original, undamaged packaging in a clean, cool, dry and protected location

LIMITATIONS

- ❑ Use with adequate ventilation.
- ❑ Do not apply to damp or contaminated surfaces.

SUBSTRATE PREPARATION FOR CONCRETE SURFACES

1. Concrete shall be water-cured and attain a 27 MPa minimum compressive strength. Moisture content in the concrete must be lower than 6% as measured using a Tramex CME 4 Moisture Meter. Excess moisture in the concrete can prevent the coating materials from performing as intended. Depending on concrete construction and job site location, additional concrete testing may be required. Please contact your local Tremco Representative.
2. Concrete shall be free of laitance which may inhibit sufficient adhesion. Due to the significant adhesive bond of the Tremco PUMA primer all concrete surfaces **must be shotblast** prior to any coating application. For proper methods, refer to ICRI's Technical Guideline No. 03732.
3. Concrete surface shall be properly cleaned so that the surface to receive the coating, sealant, or liquid applied flashing is free of any laitance, mould, paint, sealers, coatings, curing agents, loose particles, and other contamination or foreign matter which may interfere with the adhesion.
4. Shrinkage cracks in the concrete surface which are 1.6 mm wide or greater shall be treated according to the instructions in "Detail Work -EWS Products".
5. Structural cracks, regardless of width, shall be ground out to a minimum 6mm x 6mm deep and treated according to the instructions in "Detail Work -EWS Products".
6. Spalled areas shall be cleaned and free of loose contaminants prior to repair. Because jobsite conditions vary, it is recommended that you contact your local Tremco Representative. Depending on the substrate and depth of the spalled area, a TREMcrete concrete repair product will be recommended as the best method of repair.
7. In the event of exposed reinforcing steel, it is recommended that the structural engineer of record be contacted for investigation of the condition and work with Tremco for the best method of repair.
8. Surfaces shall be made free of defects that may telegraph and show through the finished coating. Surfaces which are rough (fins, ridges, exposed aggregate, honeycombs, deep broom finish, etc.) shall be levelled and made smooth by applying the appropriate TREMcrete concrete repair product or a coat of sand-filled Tremco PUMA WC according to the instructions in "Detail Work - EWS Products."
9. All drains shall be cleaned and operative. Drains shall be recessed lower than the deck surface. Surface shall be sloped to drain and provide positive drainage. Drains should be detailed as instructed below:
   - Cut a 6mm wide x 6mm deep keyway into the concrete surface at any point where the coating will have an exposed terminating edge- that is, any point where the coating will end in an open area subject to traffic, for example, at the end of a ramp, around drains and alongside expansion joints.
10. If the project is a restoration deck, old sealant and backing material shall be removed. The joint interface will require a thorough wire brushing, grinding, sandblasting, and primer.
11. Cut termination reglets into concrete dock around the perimeter of the area to be coated with Vulkem EWS

CONDITIONS FOR METAL SURFACES

All surfaces shall be sand-blasted to meet the requirements of AS 1627.4, class 2.5 for "Near White Metal".

SUBSTRATE PREPARATION FOR TIMBER SURFACES

Wood must be 15mm min, exterior-grade plywood, "A"-side up and well fastened with spiral or coated nails, with proper consideration given to joints and movement.

JOBSITE MATERIALS

Recommended materials and their use are as follows:

1. **Tremco PUMA Primer:** A two-part, chemical-curing MMA primer for porous and non-porous surfaces.
2. **Tremco PUMA BC**: A two-part, chemical-curing PUMA modified coating used as an elastomeric, waterproofing membrane for Vulkem EWS.
3. **Tremco PUMA TC**: A two-part, chemical-curing MMA coating used to lock in aggregate and provide additional chemical and UV resistance to Vulkem EWS.
4. **Tremco PUMA Cleaner**: A one-part PUMA cleaner for all tools such as mixing paddles, squeegees, spiked rollers and spatulas. Always use this cleaner for Vulkem EWS materials. Never use any kind of solvent to clean any of your tools as this will cause contamination and inhibit cure.
5. **Tremco PUMA Initiator**: A benzoyl peroxide-based initiator used to react to all components of Vulkem EWS.
6. **Tremco PUMA Filler:** A calcium carbonate filler used to thicken PUMA resins
7. **Aggregate**: 30-50 mesh sized silica sand for the primer application. 16-30 mesh sized silica sand or colour quartz for the wear application, which imparts a textured surface and contributes to wear resistance.

Useage Guide

Table 1 : Quick Reference Application Chart

Product	Coverage Rate		Thickness	
Tremco PUMA Primer	M^2L	M^2/Pail	WFT	DFT
	2.2	49.94	0.43	0.43
Tremco PUMA BC	0.66	14.90	1.5	1.5
Tremco PUMA TC1	1.96-2.2	44.40 - 49.94	0.43-0.50	0.43-0.50
Tremco PUMA TC2	1.22-1.59	27.69-36.09	0.63-0.76	0.63-0.76

NOTE: Tremco PUMA BC will fill cracks and control joints when applied at the recommended thickness noted in Base Coat Application section. Please note, Tremco PUMA BC is not for use in the application of expansion joints. For expansion joints see "Detail work- Dymonic 100"

PRIMING CONCRETE SURFACES

1. Mix Tremco PUMA Primer for 1 to 2 min prior to the addition of Tremco PUMA Initiator.
2. Mix Tremco PUMA Primer thoroughly together with Tremco PUMA Initiator in accordance with Table 3 for 2 to 3 min.
3. Apply Tremco PUMA Primer at a minimum of 2.2m²/L to yield 0.43 wet mm to the entire area to be coated. The recommended method of application is with a roller. Application below 0.43 wet mm will result in the primer not curing.
4. Once primer is rolled out evenly, lightly broadcast 30 to 50 mesh sized silica sand into the primer at a rate of 0.3kg/m².
5. Allow Tremco PUMA Primer a minimum of 30 min to fully cure.

DETAIL WORK - EWS PRODUCTS

DEFECTS, PATCHING, SLOPING AND CRACKS

1. Mix Tremco PUMA WC for 1 to 2 min prior to the addition of the silica sand.
2. Begin with 1kg of sand for every 1L of Tremco PUMA WC. Additional sand can be added if a thicker consistency is desired.
3. Once Tremco PUMA WC and the sand are blended together, combine this mixture with the Tremco PUMA Initiator in accordance with Table 3 and mix thoroughly for 2 to 3 min. Amount of Tremco PUMA Initiator is dependent on ambient temperature. Please note the Tremco PUMA Initiator addition is based in the ratio of Initiator to Tremco PUMA WC, not Initiator to Tremco PUMA WC with silica sand. Please see Table 3 for addition amounts.
4. For uneven spots and other defects in the surface, such as pitting or cratering, a thicker mix of Tremco PUMA WC and sand may be required. Trowel the material to create an even surface with the concrete.
5. Allow Tremco PUMA WC with sand mixture to cure a minimum of 45min before proceeding to base coat application.

HORIZONTAL TO VERTICAL TRANSITION

1. Mix the Tremco PUMA BC for 2 to 3 min prior to the addition of the Tremco PUMA Initiator. Ensure that Tremco PUMA BC is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 3 for 2 to 3 min.
2. Apply a fillet of Tremco PUMA BC 25mm wide at the juncture of all horizontal and vertical surfaces (such as hobs, wall sections, columns or penetrations through the deck). Tool Tremco PUMA BC to form a 45° fillet. Use sufficient pressure to force out any trapped air and to assure complete wetting of the surface. Remove excess material from the deck or wall surface.
3. Apply a strip of tape (masking tape or duct tape) to the vertical sections, 50 to 75mm above the Tremco PUMA BC fillet to provide a neat termination of Tremco PUMA BC.
4. Apply Tremco PUMA Primer over the Tremco PUMA BC fillet before applying coating.
5. For penetrations, apply Tremco PUMA Primer over the fillet, up the penetration to meet upturn requirements in AS4654.2. Allow primer to cure.
6. Following the primer application, mix Tremco PUMA BC. Mix in Tremco PUMA Initiator in accordance with Table 3.
7. Apply the Tremco PUMA BC mixture using a medium-nap roller to achieve a minimum thickness of 1.0mm over the primed penetration, over the fillet, and extended minimum of 300mm onto the horizontal plane. Spiked rollers are not required for change in plane.
8. Apply Tremco PUMA Primer over the Tremco PUMA BC before coating over.

CONROL JOINTS

1. Mix the Tremco PUMA BC for 2 to 3 min prior to the addition of the Tremco PUMA Initiator. Ensure that Tremco PUMA BC is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 3 for 2 to 3 min.
2. Pour into joint or crack apply a cant of Tremco PUMA BC 2.5cm wide at the juncture of all horizontal and vertical surfaces (such as hobs, wall sections, columns or penetrations through the deck). Tool Tremco PUMA BC to form a 45° fillet. Use sufficient pressure to force out any trapped air and to assure complete wetting of the surface. Remove excess material from the deck or wall surface, stirring at tool Tremco PUMA BC.

DETAIL WORK - DYMONIC 100

Note: Do not apply sealant to a frosty, damp or wet surface or when substrate temperature is below 4°C or the surface temperature is above 43°C. Cure times as stated below are based upon standard ambient conditions of 23°C, 50% RH. A decrease in ambient temperature and humidity will significantly lengthen the cure time.

1. Install an appropriate closed cell backing rod to all expansion joints. Set depth of backer rod to control the depth of the sealant. (Depth of sealant is measured from the top of the backer rod to the top of the concrete surface.) Proper depth of sealant is as follows:
   - The minimum joint size is 6mm x 6mm.
   - For joints 6mm to 12mm wide, the depth to width ratio should be equal.
   - Joints 12mm wide or greater, the depth to width ratio should be 1:2
2. All expansion joints shall be sealed with Dymonic 100, and tooled flush with the surface. Note: Expansion joints should not be coated over.
3. Allow sealant to fully cure.

BASE COAT APPLICATION

1. Mix Tremco PUMA BC for 1 to 2 mins prior to the addition of Tremco PUMA Initiator. Note: for ramps up to a 40% slope, mix Tremco PUMA BC for 2 to 3 mins before adding Tremco PUMA Initiator.
2. Ensure Tremco PUMA BC is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 3 for 2 to 3 mins. Amount of Tremco PUMA Initiator is dependent on the ambient temperature. Please see Table 3 for addition amounts.
3. Apply Tremco PUMA BC at 0.66m²/L to yield 1.5 wet mm thick to the entire area. The recommended method is a metal notched rake.
4. Spike roll Tremco PUMA BC immediately to release all air bubbles from the coating.
5. Allow Tremco PUMA BC a minimum of 45 mins to cure.

TOP COAT APPLICATION

1. Mix Tremco PUMA TC for 1 to 2 mins prior to the addition of Tremco PUMA Initiator.
2. Ensure Tremco PUMA TC is thoroughly mixed together with the Tremco PUMA Initiator in accordance with Table 3 for 2 to 3 min. Amount of Tremco PUMA Initiator is dependent on the ambient temperature.
3. Apply first Tremco PUMA TC at 1.96 to 2.2m²/L to yield 0.43 to 0.5 wet mm thick to the entire area. The recommended method of application is with a soft squeegee and roller.
4. Immediately following the application of the Tremco PUMA

TC, broadcast to refusal (flood coat) the material with 16-30 mesh diameter silca sand or colour quartz

5. Allow Tremco PUMA TC a minimum of 45 mins to cure. Before proceeding with the final Tremco PUMA TC, sweep or blow off any excess sand.
6. Apply final Tremco PUMA TC at 1.22-1.59 M²/L)to yield 0.63 to 0.76 net mm to entire area
7. Allow a minimum of 1hr before opening to pedestrian traffic

CLEAN UP

- ❑ Clean all adjacent areas to remove any stains or spills with Tremco PUMA Cleaner.
- ❑ Clean tools or equipment with Tremco PUMA Cleaner.
- ❑ Clean hands by soaking in hot, soapy water then brush with a stiff bristle brush.

TROUBLESHOOTING

- ❑ This section describes common industry application issues when certain environmental conditions exist. Below are some commonly seen issues and remedies. If any of these should occur, it is always recommended you contact your local Tremco Representative.
- ❑ Tremco requires that any possible recoating job be reviewed and approved by your Tremco Representative prior to installation.
- ❑ When a deck contains too much moisture, the excess moisture may change into a vapour which then condenses at the concrete-membrane interface before the coating has cured, which will cause blisters or bubbles, which, in turn, will interfere with proper adhesion. If this should occur the blisters/bubbles can be cut out, allowing the moisture to escape. After moisture has escaped and the surface is dry, the area can be repaired.
- ❑ If the coating is applied in very hot ambient temperatures, the air in the small spaces between the concrete particles increases in volume and forms blisters. Contact Tremco should this occur
- ❑ Tremco PUMA products should only be applied when the substrate temperatures below 46°C

HEALTH & SAFETY PRECAUTIONS

The Safety Data Sheet (SDS) must be read and understood prior to use.

TECHNICAL SERVICE

TREMCO has a team of Representatives who provide assistance in the selection and specification of products. For more detailed information or service and advice, call Customer Service on (02) 9638 2755 or fax (02) 9638 2955.

GUARANTEE/WARRANTY

TREMCO products are manufactured to rigid standards of quality. Any product which has been applied (a) in accordance with TREMCO written instructions and (b) in any application recommended by TREMCO, but which is proved to be defective, will be replaced free of charge.

Any information provided by TREMCO in this document in relation to TREMCO's goods or their use is given in good faith and is believed by TREMCO to be appropriate and reliable. However, the information is provided as a guide only, as the actual use and application will vary with application conditions which are beyond our control. TREMCO makes no representation, guarantee or warranty relating to the accuracy or reliability of the information and assumes no obligation or liability in connection with the information. To the extent permitted by law, all warranties, expressed or implied are excluded.

TABLE 2: Quick Reference Application Chart (Ramps)

Layer	PRODUCT	MM	CURE TIME	M²/L
Primer	Tremco PUMA Primer	0.43	30 min	2.2
Base Coat	Tremco PUMA BC	1.5	45 min	0.66
Top Coat 1	Tremco PUMA TC	0.43 to 0.5	1hr	1.96 to 2.2
Top Coat 2	Tremco PUMA TC	0.63 to 0.76	1hr	1.22 to 1.59

TABLE 3 : Temperature Chart

Temperature C	Grams per Litre
20 to 35	20g of initiator/L resin
10 to 20	40g of initiator/L resin
0 to 10	80g of initiator/L resin
-10 to 0	120g of initiator/L resin